

4294-E

COUNTER, FREQUENCY

1. GENERAL. This procurement requires a high accuracy CW microwave frequency counter with IEEE Std 488.1 bus control and data transfer capability.

2. CLASSIFICATION. Class 3 in accordance with MIL-PRF-28800 for shipboard applications.

3. OPERATIONAL REQUIREMENTS. The equipment shall be capable of measurements within the minimum ranges, specifications and accuracy detailed below.

3.1 Measurement characteristics.

3.1.1 Channels. 2 input channels shall be provided to cover the frequency range.

3.1.2 Frequency Range. 10 Hz to 20 GHz.

3.1.3 Resolution. ≤ 1 Hz at 20 GHz.

3.1.4 Accuracy. ± 1 count \pm (timebase accuracy x frequency) \pm trigger accuracy

3.1.5 Display Digits. ≥ 11 digits.

3.1.6 Sample rate. Variable from 20 ms to 1 s.

3.1.7 Amplitude discrimination. The larger of two or more signals shall be counted when there is at least 20 dB amplitude difference between signals from 600 MHz to 20 GHz.

3.1.8 FM tolerance. Minimum deviation: 20 MHz p-p. Minimum rate: 10 MHz.

3.2 Input characteristics.

3.2.1 Sensitivity

Frequency Range	Minimum Sensitivity
10 Hz to 30 Hz	40 mVrms
30 Hz to 125 MHz	25 mVrms
125 MHz to 600 MHz	-19 dBm
600 MHz to 12.4 GHz	-33 dBm
12.4 to 20 GHz	-28 dBm

3.2.2 Maximum Input.

Frequency Range	Maximum Level Input
10 Hz to 125 MHz	2 Vrms
125 MHz to 2 GHz	+5 dBm
2 GHz to 20 GHz	+10 dBm

3.2.3 Input Impedance. High impedance input: 1 M Ω shunted by ≤ 60 pF. Low impedance input: 50 Ω .

3.2.4 Coupling. AC coupling.

3.3 Timebase characteristics.

3.3.1 Frequency. 10 MHz.

3.3.2 Aging rate. $\pm 5 \times 10^{-10}$ /day.

3.3.3 Line Variation Stability. Less than or equal to: $\pm 1 \times 10^{-10}$ for 10% change in line voltage.

3.3.4 Temperature stability. Less than or equal to: $\pm 3 \times 10^{-9}$ over the operating temperature range of 0 to 55 °C.

3.4 External reference output.

3.4.1 Frequency. 10 MHz

3.4.2 Amplitude. ≥ 1 Vp-p.

3.5 External reference input.

3.5.1 Frequency. 1, 2, 5, and 10 MHz

3.5.2 Amplitude. 2 to 5 Vp-p.

3.6 Display and control characteristics.

3.6.1 Hold. A measurement hold function shall be provided.

3.6.2 Reset. A manual reset control shall be provided to initiate a new measurement cycle regardless of sample rate control setting.

3.6.3 Self check. A self check function shall be provided.

3.6.4 Math functions. Frequency offset & averaging.

3.6.5 Display. Backlit LCD.

4. GENERAL REQUIREMENTS.

4.1 Power source. MIL-PRF-28800 nominal power source requirements are invoked. Maximum power consumption: 80 VA.

4.2 Digital interface. An ANSI/IEEE-488 digital interface shall be provided in accordance with MIL-PRF-28800.

4.3 Weight. 5 kg (11 lb) maximum.

4.4 Dimensions. 215 mm W, 90 mm H, and 360 mm D, maximum.

4.5 Battery restrictions. Per MIL-PRF-28800, lithium and mercury batteries are prohibited without prior authorization. A request for approval for the use of lithium and mercury batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.

4.6 Y2K Compliance. The equipment shall be certified Y2k compliant and capable of operation within the minimum accuracies, limits, and specifications set forth herein on and after calendar year 2000 without the need for additional programming or configuration.

4.7 Technical manual. A technical manual shall be provided in both printed and electronic formats. The electronic format shall consist of the installation programs for the latest version of Adobe Acrobat Reader for all computer platforms for which Acrobat is available and the technical manual in an electronic form that is readable through use of the Adobe Acrobat Reader.